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ABSTRACT

This paper presents an overview of anthropological approaches to studying mathematics classrooms, programs, and innovations in schools. Focus is placed on teaching and learning and programs and innovations from an anthropological point of view. An explanation of how the education of cultural groups could be included in these perspectives is also included. (Contains 35 references.) (ASK)

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Anthropological Perspectives for Research in Mathematics Education: Beyond "Cultural Groups"

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Invited Address
SIG/Research in Mathematics Education
AERA, April 1998

SE041758

I am pleased and honored to be invited to speak to the AERA SIG for Research in Mathematics Education, and I look forward to having an opportunity for discussion with you after my presentation.

The main title of my presentation (Anthropological Perspectives for Research in Mathematics Education) reflects the topic Patricia Wilson asked me to address. I was pleased that she asked me to talk about perspectives, and not just methods, because what anthropology has to contribute to educational research includes particular perspectives (ways of looking) as well as methods for data collection and analysis.

The subtitle (Beyond "Cultural Groups") reflects my particular focus today. Most research in educational anthropology has focused on understanding or improving the educational experiences of "cultural groups," especially racial or ethnic groups. I think this is a very important focus that could be useful to researchers in mathematics education, and much of my own work has had this focus. Because this has been the central focus in the field, many integrative resources (e.g., Ernst, Statzner & Trueba, 1994; Gibson, 1997; Gibson & Ogbu, 1991; Jacob & Jordan, 1993; Osborne, 1996) exist for this body of work. In addition, Margaret Eisenhart (in press) has a chapter in the forthcoming Handbook of Research on Teaching which presents an overview of different approaches to culture that should be useful to those interested in studying cultural groups.

However, educational anthropology's contributions are broader than its major focus on cultural groups. Another important focus of research within the field has been on the processes, contexts and cultures of classrooms, programs and innovations in

schools. I think this focus is especially relevant to researchers in mathematics education (and other areas of education) with the current attention on educational reform and the basic goal of improving the education of all students. Given that there are not the same kind of integrative resources available for this focus within contemporary educational anthropology and the fact that my most recent work examines a particular educational innovation (cooperative learning), I decided to take this opportunity to present an overview of anthropological approaches to studying classrooms, programs and innovations in schools.

My Approach

Let me say a few words about how I approach the task I've laid out above. The first issue is the sources of the work I will be discussing. Much work in contemporary educational anthropology is interdisciplinary and closely intertwined with work in education, psychology, sociolinguistics and sociology. Consequently, most of the studies I discuss in this presentation are also informed by work in those fields. In fact, some authors whose work I discuss may not self-identify as anthropologists, but I include their work here because I consider it to be "anthropologically-oriented."

Given this interdisciplinary characteristic, I think it would be useful if I briefly discuss how I see the studies I discuss below as "anthropological" or "anthropologically-oriented." The component I will highlight here is the perspective they take toward the focus of study. Anthropological studies usually examine the cultures that are created or negotiated in classrooms, programs or innovations, or the contextual influences on education in such settings. They also usually include a focus

on process and not just outcomes.

The second issue relevant to my approach today is the scope of this presentation. To be responsive to Patricia Wilson's request that I discuss how to frame and conduct anthropological studies, I have decided to discuss selected studies rather than attempt to present a more comprehensive review. I selected studies that offer different ways to frame research, and I have tried to include some studies that examine mathematics education. Clearly, the studies I discuss are not the only useful models for anthropological research on classrooms, programs and innovations in schools, and I apologize in advance to those author's whose work I was not able to include.

The third issue is the organization of the paper, which is related in part to my particular audience today. My reading of the research on mathematics education (which I have gotten primarily although not exclusively from the Journal for Research in Mathematics Education) is that although there is some research that is influenced by anthropological, sociolinguistic, and sociological perspectives, a (if not the) modal category of research is primarily influenced by psychological perspectives with much research focusing on students' (and to a lesser degree, teachers') mathematical processes and understandings.[1] Given this modal perspective, I start with those anthropological studies that are closest to psychological perspectives and move to those more broadly focused.

To do this I have used the notion of a contextual forest and the image of a zoom lens. Let me talk briefly about each.

In my research on cooperative learning I found the image of a forest (a three dimensional ecosystem with the environment, plants and animals mutually influencing one another) a more useful way to think about contextual influences than the more typical view of context as a series of concentric circles radiating out from the focus of study. This is because my analyses indicated that context and learning were interwoven, and that what might be considered the central focus for one analysis (teachers' learning, for example) might become context when viewed from another perspective (students' learning, for example). Moreover, "distant" contextual features (e.g., societal attitudes regarding competition) could have direct impact on students interactions, not just indirect impact through "intermediate" layers of context. For my purposes here, an important feature of the forest image is that there is no automatic visual "center." An observer identifies something as a central focus by choosing to "zoom in" on a particular center of influence. The center from one perspective is context from another. Thus, context is not inherently peripheral to some "core," but a function of the viewer's perspective.

Let me expand on the zoom lens metaphor a little more. Imagine that we have a lens that could identify both a focus and its related context. In two dimensional terms, I find it useful to think of these as two inverted Vs, one inside the other--the inner V being the focus and the outer V being the context that's of interest--both of which can vary. Using these images, my presentation will move from studies that examine a comparatively narrow central focus and comparatively narrow range of contexts to studies that examine a broader central focus and a broader range of contexts.[2]

Using this "zoom" approach, the focus of the first major section is Teaching and Learning; the focus of the second major section is Programs and Innovations. At the end of my presentation I will discuss how a concern with the education of cultural groups could be included in these two major perspectives.

Teaching and Learning

Psychologically-oriented studies, like many of those in mathematics education, are concerned with psychological processes of students or teachers. Some anthropologically-oriented studies take this interest one step further by examining the contextual influences on psychological processes. These studies are concerned (1) with the processes by which students or teachers, or students and teachers together, come to value and learn particular psychological processes and (2) with the contextual influences on using those processes. They view psychological processes as constructed in various ways and are interested in understanding the processes of construction.

Before discussing such studies in more depth, it may be useful to briefly discuss the concept of context in order to clarify how I am using it here. The concept of context broadly indicates phenomena needed to understand or interpret some focal event or events. However, the concept of context has been used in many different ways in many disciplines.

One approach views context as the circumstances in which a particular event occurs, "the set of circumstances or facts that surround a particular event, situation, etc." (Stein, 1967). Studies using this approach to context usually provide an

introductory chapter or section that describes the overall setting of a study. Context in this approach often is used to help determine the generalizability of a study. The underlying assumption is that if another context is similar to the one studied, then the reader can feel comfortable generalizing to the new context.

Another approach, more relevant to the studies discussed here, views context as more directly involved in what happens in the focus of study. Context in this sense influences what happens and helps one understand participants' behaviors.

The two approaches I discuss under this general focus are studies that examine social interaction as context, and studies that approach contextual influences in a broader way.

Studying Influences of Social Interaction on Learning

One approach to studying contextual influences has been to focus on social interaction, examining how teachers and students or students and students interactionally create or co-construct teaching and learning.[3] Some analyses focus on how recurring patterns of interaction create different contexts for students' learning; other analyses focus on how those contexts are co-created in an ongoing manner.

Many of the studies using a contextual perspective on teaching and learning draw on the cultural-historical approach. One reason that so many studies interested in contextual influences on teaching and learning have focused on social interaction is that English translations of Vygotsky's work and subsequent work by English-speaking neo-Vygotskians have focused on that aspect of Vygotsky's theoretical ideas (Minick, 1989). Vygotsky asserted that higher mental functions have their origins in face-to-face

appropriate activity in journal sharing. Gutierrez (1994) concluded:

> In recitation classrooms, and in responsive classrooms to a lesser degree, analysis of the journal sharing event showed that students had little opportunity to engage in collaborative interactions about other students' texts. In addition, when they had opportunities in the responsive classrooms, these opportunities were more limited than in the responsive/collaborative classrooms. Thus, journal sharing across the classrooms was a situationally defined activity. Finally, only in the responsive/collaborative classroom did the students have the opportunity to take up a broad range of interactional and conversational roles and relationships that helped them construct extended oral and written texts (p. 362).

The second example is an article by Yackel, Cobb and Wood (1991) that applied a similar perspective to students' small group interactions as sources of opportunities for learning mathematics. This study was conducted as part of a 3-year research and development project of second-grade students' mathematical learning in a constructivist learning environment in which small-group cooperative learning preceded whole-class discussions as the main instructional approach throughout the year. Their focus in this article was on how the teacher and students constructed norms for cooperation and on the learning opportunities that arose in the small groups. In these groups the focus was on children engaging in meaningful mathematics rather than on completing certain tasks, and the teacher was actively involved with the small groups. The researchers collected field notes, copies of students' written work, and

videotapes of all classes. They used one camera for a whole class perspective and two for small group interactions (recording four pairs of students for the first half of the small group time and another four pairs for the second half).

Yackel, Cobb and Wood (1991) showed how the teacher in their project classroom used two primary strategies to guide the construction of norms for cooperation and individual activity:

> First and most important, she framed situations that arose spontaneously as prototypical or paradigm cases and initiated total-class discussions of obligations and expectations with respect to these particular cases. At other times the teacher employed a second strategy in which she initiated a class discussion of the children's obligations before they worked in groups (p. 398).

Although this analysis focused on the teacher's role, Yackel, Cobb and Wood (1991) stressed that the teacher and students continually constructed and renegotiated classrooms norms in specific situations.

They also discussed learning opportunities that arose in these small groups, which are not present in traditional classrooms. These opportunities included:

> first, the opportunity to use aspects of another's solution activity as prompts in developing one's own solution; second, the opportunity to reconceptualize a problem for the purpose of analyzing an erroneous solution method; third, the opportunity to extend one's own conceptual framework in an attempt to make sense of another's solution activity for the purpose of reaching consensus (p. 406).

In summary, Gutierrez (1992, 1994), and Yackel, Cobb and Wood (1991), while focused on psychological processes and learning also included attention to how social interaction processes influence learning.

Studying Broader Contextual Influences on Teaching and Learning

Compared to the studies examined above, the next two studies expand both the focus and range of contexts examined. While students' learning is a focus of the second study below, teaching is a focus of both studies. In both studies, the researchers examine teachers learning a new method of instruction (conceptual teaching of mathematics in the first case; cooperative learning in the second). I think in such circumstances it is useful to draw on the distinction between learning about something and learning how to do it (Brown, Collins and Duguid, 1989). The teachers learned about the new instructional methods in classes or workshops. I think it is useful to conceptualize what they were doing in their classrooms as "learning how to teach conceptually" or as "learning how to teach with cooperative learning." These studies also broaden the context considered by examining a wider range of contextual influences than just social interaction.

This first study I discuss is by Borko, Eisenhart, Brown, Underhill, Jones & Agard (Borko, Eisenhart, Brown, Underhill, Jones & Agard, 1992; Eisenhart, Borko, Underhill, Brown, Jones & Agard, 1993) who focused on contextual influences on a new teacher who was learning to teach conceptually in mathematics. In the articles I discuss the authors drew on data they collected on one teacher during her final year of teacher preparation to become a middle school mathematics teacher. They interviewed the

opportunities to learn to teach procedural knowledge than she did for conceptual knowledge. They attribute the pattern of her teaching more procedural knowledge to other contextual features: unresolved tensions within the student teacher herself; tensions experienced by her professor, cooperating teachers, and other school personnel; and tensions in the university and school environments more broadly.

The second study I want to discuss in this section is my work (Jacob, in press) on cooperative learning, which took a classroom and school level view of what happened as teachers in a fourth grade mathematics class and a sixth grade social studies class learned to use cooperative learning in their classrooms. After a pilot study, I spent most of an academic year at the school collecting data. During the year I spent three to four days a week at the school, observing in the school and classrooms, interviewing teachers and students, and videotaping cooperative learning groups. For each classroom I examined its setting, how the teachers learned to use cooperative learning in the classroom, what and how students learned in the class, and contextual influences on teachers' and students' learning.

I'll focus here on the fourth grade teacher's learning to use Teams-Games-Tournaments (TGT) (Slavin, 1986, 1994) in her "high" mathematics class. Many contextual features influenced the teacher's learning to use TGT in her mathematics class: her pedagogical beliefs, goals and values; other teachers and the principal; the school schedule; time constraints; features of TGT and related materials; the district's curriculum and instructional management system; and the meaning of mathematics in the school, district and society. Because these contextual features changed over time

and interacted with the teacher's use of TGT, her learning process was ongoing. Even after the teacher had developed a stable pattern of practice with TGT in her mathematics class, contextual features continued to be important influences that she had to learn to negotiate as she sought to identify what "worked" in her classroom.

Context also proved to be important for students' learning within TGT practice sessions. (TGT involves "home teams" [termed "practice sessions" in the fourth grade I studied] where students are supposed to help one another learn and "tournaments" where students from different home teams compete in order to win points for their home teams.) The tasks, participant structures, and definition of the situation that the teacher constructed were important, but were not the full story. Students' definition of the practice sessions competitive games (the "points game" and the "finish first game"), their perception of the role of cooperative learning in their mathematics class, features of TGT, the curriculum materials, students' social skills, and the attitudes toward competition in the school and society also influenced the students' interactions with one another and their learning of mathematics.

Despite the importance of contextual features, they were by no means unilinear "causes" of how the teacher learned to use cooperative learning or how her students learned in the mathematics class. The teacher characterized some of the aspects of context as "pressures" on her, suggesting that they exerted an influence, but that she also had choices. In fact, the teacher did not always change her behavior in response to pressures she felt. For example, although the mathematics coordinator wanted her to stop using TGT in mathematics in early spring (because her students did not seem to

be completing as many objectives as the previous year's "high math" class), the teacher only reduced its frequency. Another example involved the principal. Although the principal wanted the fourth grade mathematics classes to be mixed ability, the focus teacher and the other fourth grade teachers persuaded him to approve classes based on past mathematics achievement. The teacher clearly exercised agency. Students' agency is most clearly seen in the centrality of their definition of the practice sessions as games.

Programs and Innovations

In comparison to the studies in the previous section, the studies I discuss here broaden even further both the focus of study and the context examined. The first set of studies identify influences that contribute to the outcomes of educational programs or innovations. The second set of studies examines contextual and cultural influences on how an innovation or program is used in different sites.

Studying Influences on Outcomes of Educational Programs and Innovations

One approach has been to study successful programs with the goal of identifying what internal processes contribute to the program's success. In studying internal processes, anthropological studies take an open stance but look at components of the program that anthropological perspectives and theories suggest are likely to be relevant. They examine curriculum and pedagogy, and often include psychological issues, but they also go beyond these typical "educational" perspectives to include other aspects of social processes, including participants' experiences and perspectives. Mehan, Villanueva, Hubbard and Lintz (1996), whose work I discuss

below, contrasted their perspective on the program they studied to that of educators:

> Although the results of our research are generally positive, we have attributed the success of the program to different factors than the program does (i.e., more to social scaffolds and social networks, less to inquiry-based curriculum and collaborative instruction in academic courses) (p. 24).

They argued that the fact that AVID program is successful in helping students get to college even when the AVID curriculum and instructional innovations have not been widely implemented supports their interpretation that social scaffolds and social networks are central features of AVID's success.

The first study I discuss in this section was conducted by Abi-Nader (1990), who studied PLAN, a high school program that was successful in motivating at-risk students to succeed in school. At the time of Abi-Nader's study, PLAN was an elective college prep program. Students met 45 minutes a day, and participated in a three-year curriculum that focused on reading for sophomores, writing for juniors, and public speaking for seniors.

Abi-Nader's initial research questions included:

> queries about the structure of PLAN and the cognitive and affective goals it addressed; about meanings the teacher and students attributed to their experiences; about themes that described central concerns for PLAN participants; and about the structure, content, and function of classroom talk (p. 43).

Her primary data collection took place over six months. During this period she was a

participant observer in the school and the local community. She wrote general field notes, conducted eight weeks of daily classroom observations (which were audiotaped), and regularly interviewed the teacher of the program, the ESL coordinator and three students who became key informants. She also interviewed a wide range of others involved with the program. She concluded that the program was successful because it effectively addressed three important psycho-social conditions of the students: it helped them (1) create a vision of the future that included attending college as an option, (2) develop a more positive self image as learners and as communicators, and (3) build a supportive community. Abi-Nader showed how each theme was manifested in several components of the program. Creating a vision for the future, for example, was manifested through a mentor program that brought college students and professionals to interact with PLAN students, the teacher's repeated recounting of an oral tradition of PLAN that told of PLAN students who had succeeded, and future-oriented talk about <u>when</u> the students go to college, not <u>if</u> they would go to college.

The second project, conducted by Mehan, Villanueva, Hubbard and Lintz (1996), studied AVID, an "untracking program" that has been successful in helping under-achieving high school students get to college. AVID students were placed in college prep courses and took a special elective class that met daily throughout the school year. The AVID class stressed using various "writing to learn" techniques, help from specially trained tutors who led study groups based on AVID students' notes and questions, and collaboration among AVID students. The AVID program also included "motivational days" on Fridays, which included guest speakers and trips to local

colleges. To examine how the program worked, the researchers conducted case studies in half of the high schools in San Diego that were participating in this untracking experiment. Over nearly two years, they observed in AVID and academic classrooms, interviewed AVID teachers as well as students and parents of AVID students. The indicated that placing the students in a college prep curriculum was central to AVID's success. However, they discussed several other features that they also see as important. They showed how "social scaffolding" that explicitly taught the usually implicit "hidden curriculum" (test-taking and study skills, skills for college entry, and conflict resolution strategies) along with teachers serving as advocates within the school and bridges to larger networks needed to get into college were crucial components of AVID.

By expanding their research beyond what took place in AVID classrooms, Mehan, Villanueva, Hubbard and Lintz (1996; see also Mehan, Hubbard, & Villanueva, 1994) found that AVID students developed perspectives and behaviors that supported their academic achievement while at the same time recognizing the existence of discrimination and affirming their cultural identities. Drawing on Gibson's (1988) work, the researchers viewed this as the students "accommodating without assimilating." They also identified several processes that contributed to the development of these views: isolation of AVID students into a special class, provision of public markers of group identity, and the formation of new peer groups through AVID. They found that parents of AVID students had high aspirations for their children, but parents felt that they lacked the knowledge or skills to provide students with much help. AVID gave

students access to information and skills that the parents saw themselves as lacking.

Studying Influences on How an Innovation is Used in Different Sites

Once an innovation or program is shown to be successful (whether it is locally-developed like AVID or developed by outside experts from theoretical principles or research) there often is interest in it being used more widely. As innovations become institutionalized and used more widely, the question is raised of how the innovation is used at various sites over time.

There are many ways to approach such studies. A fidelity-approach (see Snyder, Bolin & Zumwalt, 1992) would focus on how the implementation of an innovation at different sites "matched" the ideal. Other approaches, such as CBAM (Hall & Hord, 1987), add a focus on teachers' concerns about the innovation. Anthropologically-oriented studies are concerned with documenting with actually happens and with the contextual, cultural, and organizational influences on what happens.

Mehan, Villanueva, Hubbard and Lintz (1996) devoted a chapter in their book to the issue of organizational processes outside the classroom that influenced how AVID was used in different schools. They reported that although AVID was originally developed by teachers, over time it was introduced into high schools from "above" by the school district. They "could find very few cases in which all of the innovations proposed by AVID have been adopted as prescribed at one school site. In most cases, the recommended innovations have been modified or absorbed into preexisting daily educational routines" (p. 105). The organization of the AVID classroom itself was the

part of the program that was most likely to follow the suggestions from the AVID central office. The researchers found that the representation of the AVID program, the role of classroom tutors, and the college prep curriculum frequently were modified because of local circumstances, and that other aspects of the innovation sometimes were met with hostility or even rejected.

The second study I examine in this section studied eight school sites that implemented the Coalition of Essential Schools approach. The Coalition emphasizes local interpretation of nine principles. In their study Muncey and McQuillan (1996) focused on how the common principles were interpreted by students, teachers and administrators at the school sites, and on how they were implemented. To do this they studied the central staff, interactions between central Coalition staff and individual schools, and eight school sites in detail over five years. At the schools they observed classes and other school events; they interviewed students, teachers and administrators; they collected "artifacts" such as newspaper articles, yearbooks, and memos; and they surveyed 1500 students. The researchers also participated in Coalition meetings and workshops, attended Coalition-sponsored professional development activities, and interviewed central staff.

Muncey and McQuillan (1996) characterized their focus as a holistic one that assumed that all aspects of school life are interconnected and that sought to understand how the various participants interpreted Coalition philosophy and events. They viewed reform efforts from the school (or institutional) level and from the classroom level (which included the individual level in their scheme). They saw these

two viewpoints (school and classroom) as complementary.

To show how this holistic perspective was carried out from a school level perspective, I will discuss the issues covered in the case study of one school they call "Essential School," a school within a school, at "Russell High." Muncey and McQuillan's case study included a discussion of the history of Russell High prior to the introduction of the Coalition approach; the history of the implementation of Coalition principles; a description of how those principles were implemented; leadership of the Coalition effort; tensions and multiple perspectives among teachers; teachers' various views about the benefits and costs of the changes made; teachers and professors' views of professors' involvement in the project; the relations between Essential School and the larger school; and funding for Essential School.

Their holistic perspective was also manifested in their more focused classroom level analyses. In separate chapters they examined different perspectives: that of an individual teacher, that of teachers and students interacting and negotiating what happened there, and that of principals. Unlike many studies of educational reform, they explicitly addressed the role of (high school) students in what happened. Within the chapters that present classroom level analyses, Muncey and McQuillan discussed a wide variety of contextual influences on the teachers, students and classrooms, and the participants' responses and actions in relation to these contextual influences.

One strength of Muncey and McQuillan's dual school and classroom level analyses is that they could compare implementation of the Coalition's principles at both levels. They found that change was not always congruent at school and classroom

levels. While sometimes the degree of change was consistent at school and classroom levels; at other times considerable school-level change was not accompanied by comparable classroom level change, or considerable classroom-level change was not accompanied by comparable school-level change.

An interesting contribution that Muncey and McQuillan make is in discussing the overall patterns they found in light of American cultural values:

> American culture had a multidimensional influence on the school change process: it contributed to constraining what schools undertook; it created expectations for what change would entail and how difficult or easily it would be realized; it colored how people perceived these efforts; and it provided a language for debating the merits and drawbacks of educational reform (p.288).

Discussion

As I said at the beginning of my talk, my goal today has been to present an overview of the "landscape" of anthropological approaches for studying classrooms, programs, and innovations in schools. These approaches can examine a comparatively narrow focus and range of contexts, or they can study comparatively broader focus and range of contexts.

Why might scholars interested in mathematics education use such approaches? Anthropological perspectives on classrooms, programs and innovations in schools, like those discussed here, are especially important today to help educators and policy makers understand how reform occurs in educational settings. I think that attention to process, context and culture, which are central features of anthropological approaches,

also are important to achieve the basic goal of improving the education all students receive.

I have argued elsewhere (Jacob, 1997) that one reason for the dismal track record educational innovations have had in the U.S. is that context or culture generally have not been considered in developing, researching, disseminating or using educational innovations. Mainstream educational developers and researchers have focused primarily on what Erickson (1982) has called "taught cognitive learning" and have largely ignored context and cultural processes. One might say that they have cognition without context or culture. Educational anthropologists, usually operating outside of mainstream education circles, have focused on context and culture but often have not addressed "taught cognitive learning." One might say that they have had context and culture without cognition. I think much is to be gained by bringing the two perspectives together.

Anthropological studies have demonstrated that context and culture are central to learning, challenging scholars to attend to context and culture in work related to educational programs and innovations. Educational programs and innovations attempt to change educational contexts and cultures, and through those changes, to influence students' learning.

Anthropological studies, including the body of work discussed here, highlight several issues about using contextually- and culturally-sensitive approaches to improve the impact of educational programs and innovations. First, efforts to introduce an innovation need to take into account how contextual and cultural features influence

teachers' learning. Second, for an innovation to succeed, the disseminators may need to address aspects of the school or district context that conflict with the innovation. This second point raises the question of the kind of schools and districts needed to support a particular innovation and a contextually-sensitive approach to its use, and suggests that sustaining educational innovations may require reform efforts beyond the classroom level.[4]

Adding Cultural Groups Back into the Picture

To bringing the discussion full circle to the main emphasis within educational anthropology, I want to explore how the foci exemplified in anthropological studies of classrooms, programs and innovations can contribute to understanding and improving the educational experiences of cultural groups in the United States. A focus on classrooms, programs and innovations, and a focus on particular cultural groups are not mutually exclusive. In fact, many of the studies I discussed above studied programs or innovations that involved particular racial or ethnic groups. The students in the classrooms Gutierrez (1992, 1994) studied, for example, were Latino. The AVID program studied by Mehan, Villanueva, Hubbard and Lintz (1996) had the goal of helping at-risk students, who were mainly African American and Latino. The PLAN program Abi-Nader (1990) studied was for Hispanic students. So one way to combine the two foci is to study programs or innovations involving particular cultural groups.

One could also examine the experiences of different cultural groups within a classroom, program or innovation. For example, one might compare the experiences and perspectives of girls and boys in a particular mathematics program.

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